

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
28 October 2004 (28.10.2004)

PCT

(10) International Publication Number
WO 2004/092945 A3

(51) International Patent Classification⁷: **G06F 5/06**

(21) International Application Number:
PCT/IB2004/050412

(22) International Filing Date: 8 April 2004 (08.04.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
03101030.9 16 April 2003 (16.04.2003) EP

(71) Applicant (for all designated States except US): **KONINKLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL];
Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **GANGWAL, Om Prakash** [IN/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(74) Agent: **DUIJVESTIJN, Adrianus, J.**; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

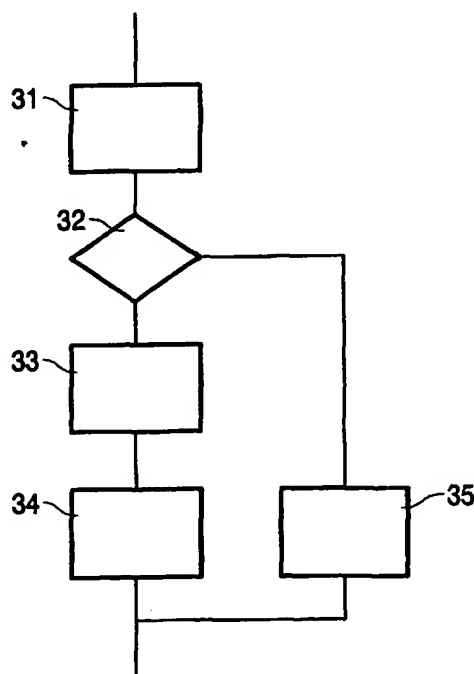
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE,

[Continued on next page]

(54) Title: DATA PROCESSING IN WHICH CONCURRENTLY EXECUTED PROCESSES COMMUNICATE VIA A FIFO BUFFER



(57) Abstract: A processing circuit executes a data producing process and a data consuming process. The data producing process produces a stream of data, the data consuming process consumes the stream of data concurrently with production of the stream. A first-in first-out buffer passes data from the stream between the data producing process and the data consuming process. The buffer comprises buffer memory, the buffer writes data-items from the stream in circular fashion into the buffer memory. A consuming process interface is arranged to process a command for making a data grain from the stream available to the data consuming process. The interface responds to the command by testing whether addresses of data within the grain to which access has to be gained wrap around in the circular FIFO buffer. The interface copies the grain from the FIFO buffer to the auxiliary memory region, on condition that the addresses wrap around, so that the wrap around is eliminated in the copied grain. The interface returns an indication to the consuming process to read the grain from the FIFO buffer when the addresses do not wrap around inside the grain, or an indication to read from the auxiliary memory region, when the addresses wrap around.



EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT,

LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Published:

— with international search report

(88) Date of publication of the international search report:

20 January 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB2004/050412

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G06F5/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DE 195 11 774 A (SIEMENS AG) 2 October 1996 (1996-10-02) column 2 - column 43; figure 1	1-13
Y	RUTTEN M J ET AL: "Eclipse: heterogeneous multiprocessor architecture for flexible media processing" PARALLEL AND DISTRIBUTED PROCESSING SYMPOSIUM., PROCEEDINGS INTERNATIONAL, IPDPS 2002, ABSTRACTS AND CD-ROM FT. LAUDERDALE, FL, USA 15-19 APRIL 2002, LOS ALAMITOS, CA, USA, IEEE COMPUT. SOC, US, 15 April 2002 (2002-04-15), pages 130-137, XP010591169 ISBN: 0-7695-1573-8 cited in the application paragraph '03.1! paragraph '04.3!	1-13

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "Z" document member of the same patent family

Date of the actual completion of the international search

17 September 2004

Date of mailing of the international search report

08/10/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Cohen, B

INTERNATIONAL SEARCH REPORT

Int ☐ Application No
PCT/IB2004/050412

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>EP 0 507 571 A (FUJITSU LTD) 7 October 1992 (1992-10-07) page 7, line 53 - page 8, line 5; figures 13A,13B</p> <p>-----</p>	1-13

INTERNATIONAL SEARCH REPORT

Information on patent family members

Int I Application No
PCT/IB2004/050412

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
DE 19511774	A	02-10-1996	DE	19511774 A1	02-10-1996
			WO	9630825 A1	03-10-1996
EP 0507571	A	07-10-1992	JP	2703417 B2	26-01-1998
			JP	4308956 A	30-10-1992
			AU	637543 B2	27-05-1993
			AU	1396792 A	15-10-1992
			DE	69227061 D1	29-10-1998
			DE	69227061 T2	11-02-1999
			EP	0507571 A2	07-10-1992
			US	5765187 A	09-06-1998